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Squab Raising



PIGEON raising is conducted successfully as a special business, but is better adapted to serve as a side issue on a small scale in towns and cities and on general farms.

A reasonable profit can be made on the investment and labor required by those who will give the pigeons careful and regular attention.

There are a number of good varieties of pigeons from which to choose for squab raising, but special care in selecting and acquiring the foundation stock is very essential, as it is difficult to determine either the value or the sex of pigeons by their appearance.

This bulletin discusses in detail the general management of pigeons for the production of squabs for market.

Contribution from the Bureau of Animal Industry

JOHN R. MOHLER, Chief

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SQUAB RAISING.

ALFRED R. LEE,
Animal Husbandry Division.

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POSSIBILITIES IN THE BUSINESS.

PIGEONS are kept in all parts of the United States, but most of the large squab-producing plants are found near the large cities in the Northeastern and Central Western States and on the Pacific coast. Many pigeons are kept as a side issue on general farms in the Middle West and South, but their value is much less than those specially bred and fed for large squabs. Prolific pigeons that produce large squabs are confined in pens on most squab-producing plants, while common pigeons, which are less prolific and produce smaller squabs of a poorer quality, are kept on the general farms and are usually allowed their freedom. This bulletin discusses the general management of pigeons for the production of squabs for market.

Pigeon raising is conducted successfully as a special business, but is better adapted to serve as a side issue on a small scale in towns and cities and on general farms. The demand for squabs, especially in large cities, is increasing. Squabs are often used to replace dressed game, which is decreasing in this country. The prices received for squabs are high enough to make squab raising return a fair profit, wherever there is a good market. An average annual return of from \$2 to \$2.50 above feed cost per pair of breeders is considered good on successful plants producing only squabs for market. Most of the large successful pigeon farms make a business of selling breeding stock and are not devoted primarily to the production of squabs for meat. There have been many failures on squab plants, as the profit in the business has frequently been greatly overestimated and the care of the stock regarded as something in which any one can succeed.

Many people can keep pigeons successfully as a side issue, although it requires constant oversight and careful attention to details. The

greatest difficulties confronting the successful raising of pigeons seem to be in getting good breeding stock and finding a good market for the product of a small flock. Pigeons are a profitable source of income on general farms where they may get much of their feed from the fields, provided they are not a nuisance and the loss by shooting and by hawks, owls, and cats is not large. They can also be raised successfully on farms where they are closely confined, provided the squabs can be marketed to good advantage.

VARIETIES SUITABLE FOR SQUAB RAISING.

The varieties of pigeons are numerous, but only a few are used extensively in squab culture; of these the Homer has been one of

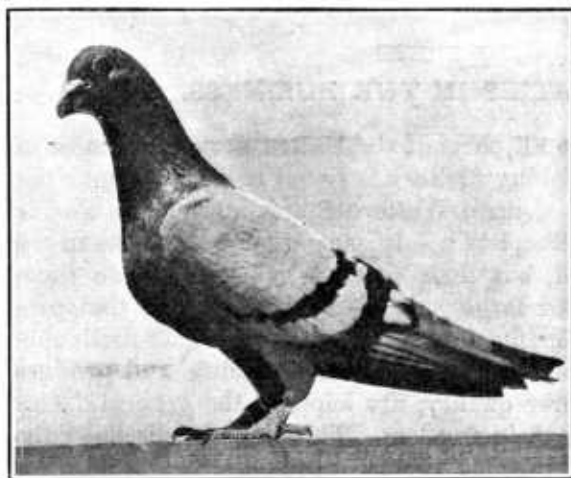


FIG. 1.—Homer (male). Until recently this variety was the most popular squab producer.

the most popular varieties. The demand for large squabs has made varieties producing larger squabs than the Homer more popular, especially the Carneau and the White King, while the Maltese, the Runt, and the Mondaine are also raised extensively. The small common pigeon is probably most widely distributed on farms. These

pigeons produce small squabs, frequently of poor quality, and are not so prolific as the varieties to be discussed.

THE HOMER.

The Homer (fig. 1) derives its name from the fact that, even when taken hundreds of miles away, it will usually return home if allowed freedom. The homing trait necessitates keeping this variety confined if the pigeons have been purchased. The Homer is a good squab producer, because it is hardy and prolific and is a good feeder and mother, but it produces a small squab. The present demand is for larger squabs, making the White King and the Carneau better breeds for producing squabs than the Homer. To increase the size of the squabs, select good-sized Homers and avoid small birds. No attention has been paid to color in breeding for squab production, but the blue and blue-checked birds are the most popular. The Homers kept for racing and carrying messages are usually of different breeding from those kept only for squab breeding.

THE CARNEAU.

The Carneau pigeon (fig. 2) has become very popular as a squab producer in the United States. This variety is somewhat larger than the Homer and is claimed to be about as prolific and nearly as good a feeder. Size is important in the production of squabs, as their value varies directly with this factor. The mature



FIG. 2.—Red Carneau (male), one of the most popular squab producers at the present time.

breeding males should weigh from 20 to 24 ounces, and the females from 19 to 23 ounces. The Carneau has a variety of colors, but those with red and yellow shades are most common. This variety is an excellent and popular squab producer, and is widely distributed in this country.

THE WHITE KING.

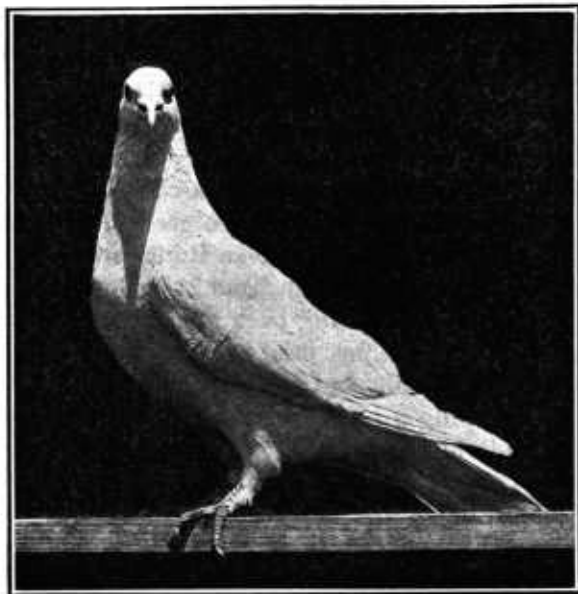


FIG. 3.—White King (male). This variety ranks with the Carneau as a squab producer.

The White King (fig. 3) is a good-sized white pigeon, resembling the Carneau in type and size. The mature male should weigh from 22 to 26 and the female from 18 to 22 ounces. It is a prolific breeder and is a popular producer of good-sized squabs, ranking with the Carneau. White squabs make attractive market birds because their white pinfeathers are less

objectionable than dark ones which occur in some other breeds and varieties.

THE MALTESE.

The Maltese pigeon (fig. 4) is a good-sized squab breeder with a very short body, and short, square, upstanding tail. It has a very prominent breast and is noted for producing squabs with large

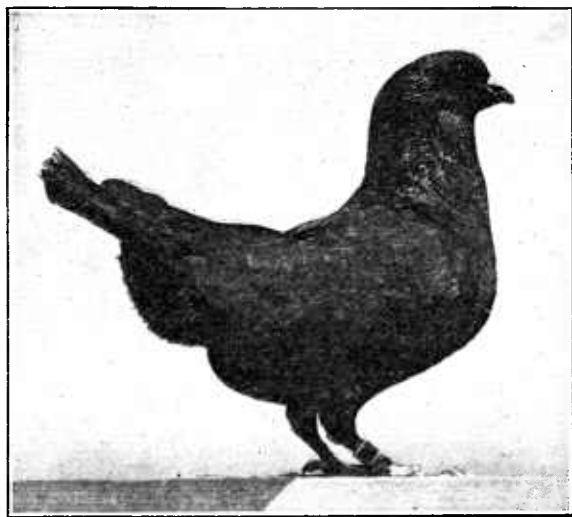


FIG. 4.—Black Maltese (male).

breasts. The carriage and type of the Maltese is very distinctive and quite different from the Carneau and White King. This variety has long, straight legs, a well-arched, long neck, and is a very active pigeon. The Black and White Maltese are the most popular. A large number of colors exists, which is also true of most varieties of pigeons. The Maltese is a good feeder and makes a

good squab breeder but is not nearly so popular as the Homer, Carneau, or White King.

THE RUNT.

The Runt (fig. 5) is the largest well-known variety of pigeons kept for squab production and is much less active than the smaller varieties. It is not usually so prolific a breeder or so good a feeder as the other breeds already discussed, although some Runts are very good producers. The mature male should weigh from $2\frac{1}{2}$ to 3 pounds and the female 2 to $2\frac{1}{2}$ pounds. It has a long back and a generally massive appearance. The Runt is sometimes used to cross on smaller varieties to increase the size of the squabs, but as a rule better permanent results are obtained by keeping a pure breed and not crossing. The Runts are often kept in individual pens for each pair of breeders, because in that way they do better than when kept together in large flocks. In large flocks they are liable to injure one another by fighting, as they can strike powerful blows with their wings. The White Runts are the most popular, followed by the Blues, but there is a wide variety of colors as in the other squab producers. While Runts are kept quite extensively, they are not nearly so commonly used

for squab breeding as the varieties already discussed, except the Maltese.

THE SWISS MONDAINE.

The Swiss Montaine is a good-sized squab breeder, somewhat similar in type and size to the Carneau and White King. The male breeders should weigh from 24 to 28 ounces and the hens 20 to 25 ounces. It is a good breeder and feeder and makes a very good squab breeder. It is a close-feathered bird with clean legs or legs only sparsely feathered. Although not so popular as the Carneau or White King, it has qualities which make it quite similar to those breeds for squab production.

SELECTING BREEDERS.

Good breeding stock is one of the prime essentials of success in squab raising. It is advisable to buy pigeons from reliable breeders, if possible, from

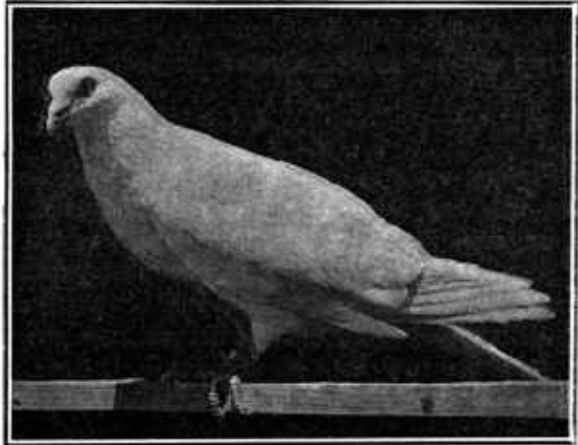


FIG. 5.—White Runt (male), the largest variety of pigeons.

those who guarantee their product. Many failures in squab raising have been due to poor stock, because the prospective producer bought old pigeons past their period of usefulness, or a surplus of male birds. Both the age and the sex of pigeons are difficult to determine by casual observation, which forces the buyer to depend largely on the seller's word.

There is a great difference in the value of pigeons as squab producers, even when of the same variety, making it advisable to select the birds individually for their prolificacy and vitality, for the quality and size of their squabs, and their ability properly to feed and rear offspring. Dark-colored skins, legs, or beaks indicate poor quality of flesh, and should be avoided by selecting birds for breeding which have white or pinkish-white skin and light-colored legs.

It is advisable either to buy mated pigeons which are from 1 to 3 years old or to get young birds 6 to 8 weeks old and mate them at the proper age. Pigeons are most valuable as squab producers when from 2 to 6 years of age, although many will breed until they are about 8 years old. The small varieties mate and breed at 5 to 6

months, and the larger ones at 8 to 9 months. Squabs which are to be saved for breeding should be banded as soon as their feet are large enough to hold the bands, usually when 7 to 10 days old, so that a record can be kept of their breeding. Seamless bands are used, and are slipped over the squab's feet to keep a record of each pair. The young pigeons are usually removed from the breeding pen and put into a pen by themselves after they are able to fly about and pick up their own feed. A catching net or bag made of large-mesh cotton netting, with the mouth or top about 18 inches in diameter, is very useful for catching the pigeons. Squabs hatched in April, May, and June make the best breeders, while their value on the market is comparatively low at that time of the year.

MATING.

Pigeons mate in pairs and usually will remain constant through life, although the mating may be changed if desired. The presence of unmated pigeons (especially males) in the pigeon loft is a source of much trouble and usually prevents profitable results; therefore it is very essential that only mated birds are allowed in the breeding pens. Pigeons are usually mated at from five to nine months of age.

There are two methods of mating, natural and forced. Unmated males and females are kept in a pen in natural mating and allowed to select their own mates, which is usually indicated by the male billing and driving the female. If properly mated the pair will commence to build their nest and will be found together at night, while unmated birds usually remain alone. The female pigeon is usually smaller and less assertive than the male and has a smaller head and neck, although there are many exceptions to the rule. A young male may be used in the pen as a decoy to mate up with the females so that the latter may be caught and removed. The female usually is on the nest early in the morning and at night, the male staying on the nest during the day. Newly mated young birds may be allowed to lay and hatch their first eggs in the mating pen to see whether they are all right.

Forced mating may be made if the sex of the birds is known. The individual birds are confined in mating coops with a movable-wire or open-slat partition between the birds which are to be mated, so that they can see each other for two or three days, when the partitions are removed and the birds are allowed to go together. They are then removed to the breeding pen if they appear to be properly mated. Both natural and forced matings are used extensively with success.

The breeders should be selected with a definite object in forced matings, using males strong in points where the females are weak. The same principle should be followed, so far as possible, in selecting

the birds for natural mating. Old pigeons mated with young birds often give good results in breeding, making it advisable sometimes to break up and change a mating as a pair gets old and prolificacy decreases. Some matings produce undesirable market qualities in the squabs, which makes it necessary to remate or cull out the flock.

Continued close inbreeding is not desirable, and many pigeon raisers try to avoid any inbreeding. The relationship of pigeons as shown by their bands, both in natural and forced matings, should be considered. If the pigeons are allowed to mate at will and a pair from the same nest mate together, it is usually advisable to separate and remate such closely related birds. The danger from continued close inbreeding appears to depend largely on how carefully the breeders are selected, but it should be avoided by the average squab producer.

The males are usually banded on one foot and the females on the other to distinguish the sex of the birds in the breeding pen. While the squabs are in the nest the male usually grows faster and is noticeably larger than the female. Careful records of all matings should be kept. If a breeding pigeon dies, its mate should be removed from the pen and a new mating made. Pairs which do not produce and rear a good number of squabs should be broken up, mated again, and all poor producers or poor feeders marketed. It is very essential to cull all unproductive birds if profitable results are to be obtained.

PIGEON HOUSES AND EQUIPMENT.

The prime essentials in pigeon houses are fresh air, dryness, sunlight, and space enough to keep the pigeon comfortable. The location should have good water drainage and air circulation in order that the floor and yards may be dry, while it should be situated for convenience in management. A southern or southeastern exposure is best. The general principles of construction which apply to poultry buildings apply also to pigeon houses. Almost any style of house can be used for pigeons, and in many cases where only a few pigeons are kept, available buildings, such as the lofts of barns and vacant poultry houses, can be fitted up at a small cost.

A gable-roof building 10 to 15 feet wide, 6 feet from the floor to the eaves, and 8 or 9 feet to the ridge makes a good pigeon house. A shed-roof house, such as is shown in figure 7, also makes a good pigeon house, and is the easiest and cheapest style of house to build. If a large part of the roof slopes toward the south, the house may be too hot during the summer. The house can be made any length desired, but it is not considered advisable to keep more than 400 pairs of breeders in one house. A pen 8 by 9 feet will accommodate 25 pairs of pigeons, while 40 pairs may be kept in a pen 8 by 13 feet.

The necessary floor space to allow for each pair varies from $2\frac{1}{2}$ to 3 square feet, according to the size of the pen, a pair of birds requiring less floor space in large than in small pens. From 20 to 75 pairs of pigeons may be kept to advantage in each pen. A separate pen for each pair of birds is sometimes made for Runts, as that breed does not do well where any considerable number of breeders are kept together.

Various styles of houses for pigeons are shown in the accompanying figures. Details of the construction of houses are given in *Farmers' Bulletin 574*, entitled "Poultry House Construction." The same kind of lumber and style of construction is used for pigeons as for

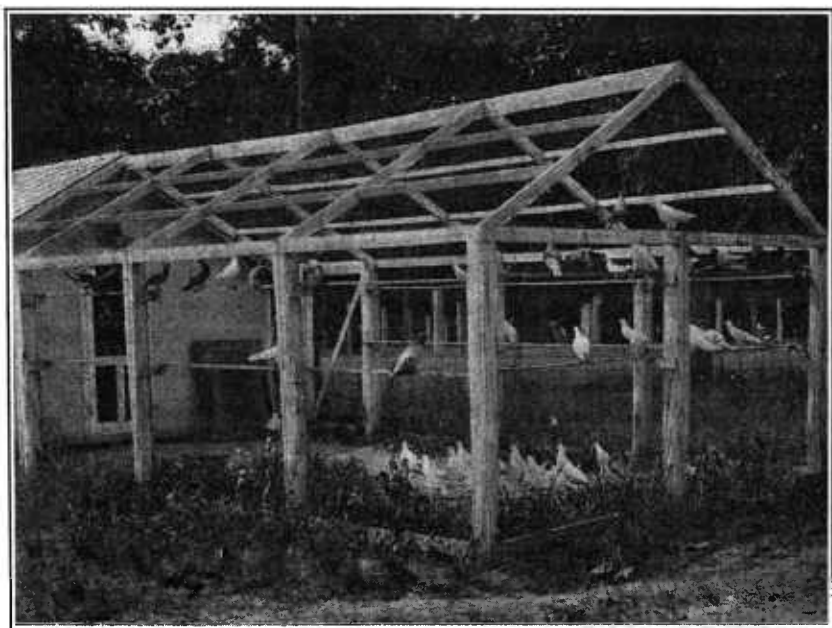


FIG. 6.—Gable-roof pigeon house and fly.

hens, except that squab houses must be built well and tight to make the houses comfortable during cold weather. It costs at the rate of from about \$2 to \$2.75 a pair to construct pigeon houses, including interior fittings and a small outside pen or flyway.

The house should be tightly constructed on all sides to prevent any drafts. More open and less expensive houses may be built in warm than in cold climates, but the house must be comfortable in cold weather. It is especially necessary to make the north, west, and east sides of the pigeon house tight and comfortable for winter use, which is often done by covering these walls on the outside with roofing paper.

The number of squabs produced in winter in cold climates may be increased somewhat by heating the pigeon house, but this expense does not pay under average conditions in the United States. Windows should make up about one-tenth of the front of the house and should be arranged so that they can be taken out during warm weather. One window in each pen may be replaced by a muslin curtain in cold weather for ventilation when the house is shut. Too many windows make the house cold during the winter, and pigeons will not produce well if they are cold. The windows should be placed just below the eaves to allow the sun to shine back into the house. In the southern section of the country, including Washington, D. C., and all points south of that city, it is advisable to have a small shutter in the rear wall just under the eaves, for summer ventilation.

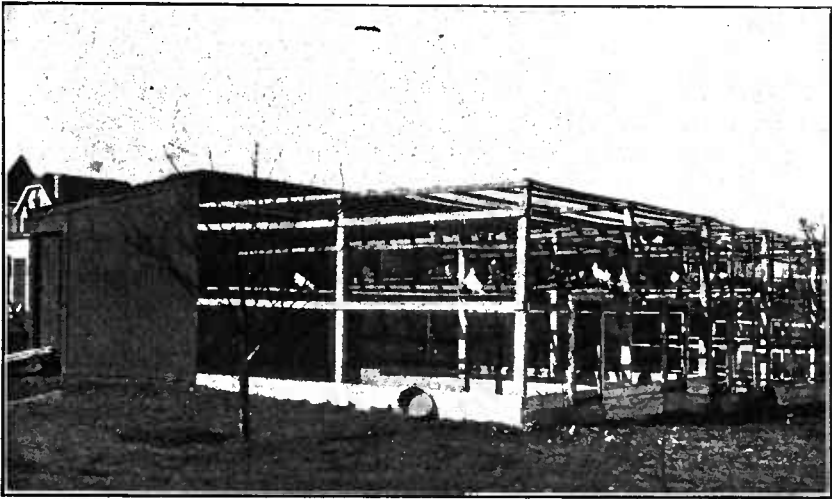


FIG. 7.—Pigeon house and fly. Note bath pan against fence.

This must be well built so that the opening can be closed tightly in winter to prevent any drafts, and it may be necessary to cover the opening and shutter with roofing paper during cold weather.

FLOORS AND ALLEYS.

Pigeon houses should be constructed so that they can not easily become infested with rats. This is usually accomplished by building the house from 12 to 24 inches above the ground, using board floors, and boarding up the space between the ground and the floor, but leaving small doors so that cats and dogs can get under the house. If floors are built several inches above the ground they should be double, with building paper between the layers, except in the southern part of the United States. Cement makes a very good floor for a

pigeon house, as it keeps out the rats. The floors should be well covered with sand or kept heavily bedded with straw. Alleyways 2½ to 3 feet wide are usually built on the north side of pigeon houses which contain more than two or three pens. The pens are arranged to open into the alley so that in going through the house the attendant will not disturb the pigeons any more than is necessary. Alleys increase the capacity cost of the house and are not considered necessary by some pigeon raisers.

If the pigeons are confined, a flyway, or outside yard covered with wire, is attached to the south side of the house. The flyway is usually from 6 to 8 feet high, 15 to 30 feet long, and the width of the pen. The sides and top are usually covered with 1-inch mesh wire to keep sparrows out, as they eat the feed. Two-inch mesh wire can be used where sparrows are not prevalent. A few pigeon holes 6 inches high and 8 to 12 inches wide are cut in the front of the house at a convenient height, usually about 4 or 5 feet above the floor. A shutter should be provided so that the openings can be closed. Lighting boards 6 inches wide may be placed at the bottom of the holes both on the outside and inside of the house. Roosting boards about 4 inches wide are placed 4 or 5 feet above the ground at the end and on the sides of the flyway. It is not considered advisable to have roosts extending across the flyway. (See fly in fig. 6.)

INTERIOR FIXTURES.

The interior fittings should be as simple as possible and easy to clean. Two nest boxes are provided for each pair of pigeons, and it is advisable to have a few extra nests. The two nests are necessary because the pigeons frequently start to build their second nest when their squabs are only 2 weeks old. Nest boxes are usually made about 12 inches square; some breeders prefer to have them of this width and height but from 15 to 18 inches deep. A good method of construction is to use lumber 12 inches wide for the floor of the nests, arranging each floor so that it will slide on cleats and can be easily removed and cleaned. The nests are usually built in tiers against the rear wall of the pen, extending from the floor to 7 or 8 feet high (see fig. 8), but they may also be placed on the side walls as in figure 8. Egg or orange crates may be used for nests, but are more difficult to keep clean and less durable than nests of removable boards 1 inch thick.

Another good arrangement of nest construction is shown in figure 9, where the compartments are 14 inches deep and 30 inches long and 14 inches high. Two nest bowls for each pair of breeders are placed in each compartment. A portable wire front extending the entire height of the nests is used in the front of each tier of compartments with only a small opening about 6 inches wide in the center through which the pigeons enter the nest. This arrangement keeps both

nests for each pair of breeders close together and makes it easier for the parents to care for both nests at the same time. This also keeps the squabs protected in the nest bowls and helps to prevent other birds from breaking up the nests or injuring the squabs.

Nest pans with flat bottoms may be provided for each nest. Such pans may be made of wood, wood fiber, or earthenware. A con-

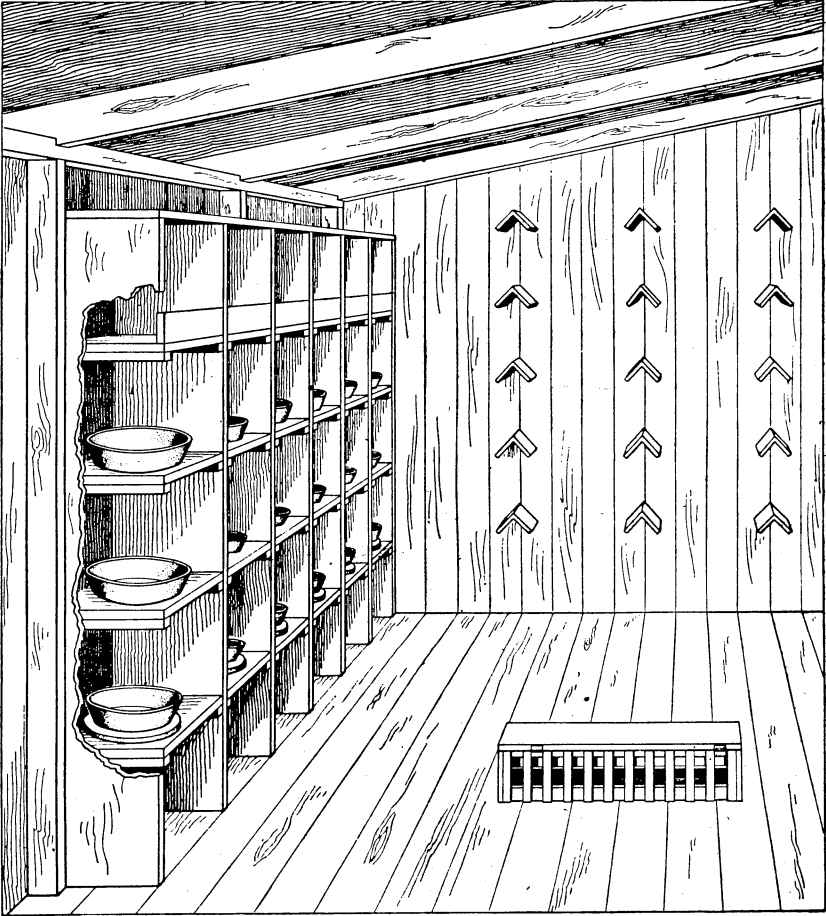


FIG. 8.—Interior of pigeon pen showing a feed hopper, roosts, nest boxes, and different kinds of nest pans.

venient size is from 3 to 4 inches deep and 8 to 10 inches in diameter. They may be screwed to a board slightly larger than the nest pan if made of wood, or set directly in the nest box if of a heavier material. Some breeders do not like to use earthenware nests in the winter. No nest pans are used in some pigeon plants and the nesting material is retained by a 3-inch strip on the front of the nests, as shown in the top tier of nests in figure 8. Short pieces of hay, straw, pine

needles, or tobacco stems are used for nesting material. This is kept in an open crate or in a corner of the house and the pigeons allowed to select and build their own nests, or the floor of the pens may be covered with straw. A layer of sand over the floor makes it easy to keep the floor clean.

Roosts of various sizes, usually arranged in perpendicular rows, are placed at convenient points in the pen. A good type of roost is A-shaped, made of two boards about 5 inches wide and 6 or 7 inches long, placed directly over each other as that the pigeons will not soil one another with their droppings. If hoppers or feed troughs are used they should be of good size, while the hoppers should be constructed

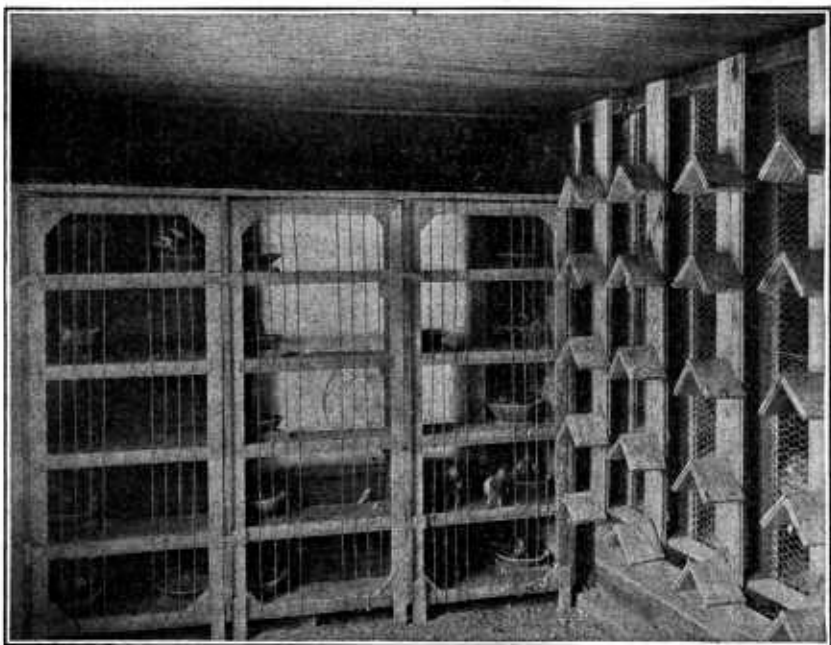


FIG. 9.—Interior showing how nests may be arranged in pairs.

so that the pigeons can not waste the grain easily by throwing it on the floor. Fountains or pans with floats, or covered with wire, so that the pigeons can not bathe, are best adapted for drinking vessels, while a galvanized-iron pan from 3 to 4 inches deep and from 15 to 20 inches in diameter make a good bath pan. (See fig. 10.)

HATCHING AND REARING SQUABS.

The hen pigeon usually lays 2 eggs in 3 days before she starts to sit. If more than 2 eggs are laid it is advisable to remove the extra ones, as a pair of pigeons can raise only 2 good squabs at one time. The period of incubation of pigeon eggs is about 17 days. Both the

male and the female pigeon sit on the eggs, the male usually sitting from about 8 o'clock in the morning until 3 or 4 o'clock in the afternoon, while the female sits the rest of the time. Pigeon eggs are usually fertile if the pigeons are healthy and properly fed, especially when they have free range. One squab (usually male) frequently hatches first, and if there are several cases in which one squab outgrows its nest mate, it may be advisable to sort the squabs in the nests, making the pairs as nearly uniform as possible in size and age. Some birds do not feed their squabs well and it is sometimes neces-

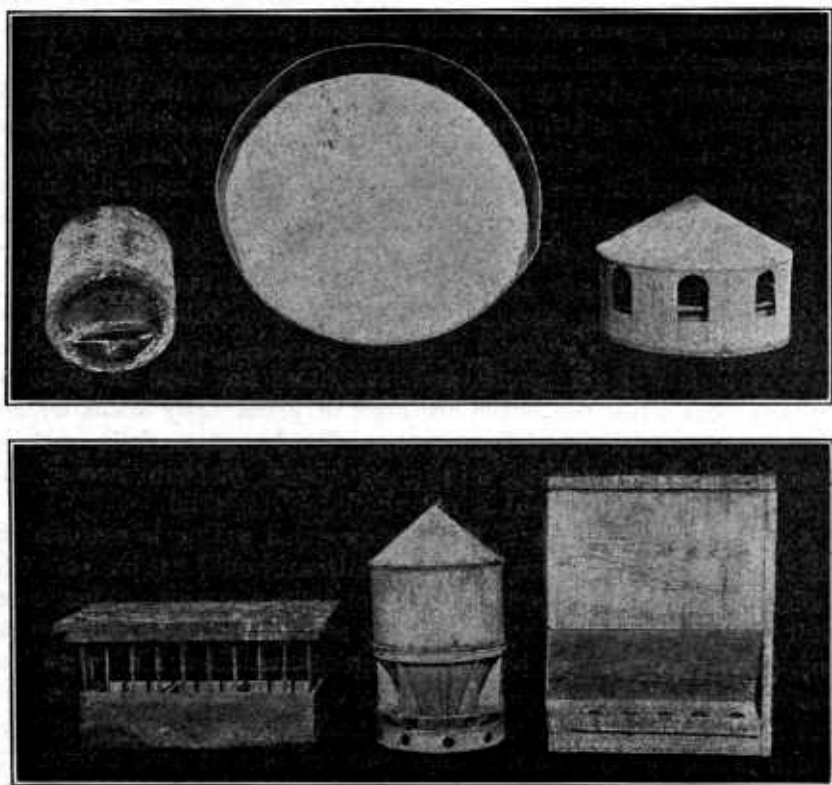


FIG. 10.—Above; water founts with bath pan in center. Below; feed hoppers of different styles.

sary to transfer such squabs to other birds having only one squab each, but they should not be changed any more than is absolutely necessary.

Squabs are reared and fed by both of the parent birds on a thick, creamy mixture called pigeon milk, produced in the crop of the pigeons. It is very essential that the pigeons have a plentiful supply of grain while they are rearing squabs if rapid growth of the young is to be secured. Pigeons usually feed the squabs shortly after they

themselves are fed and should not be disturbed at that time, thus making it advisable to water them before they are fed. Care should always be taken not to frighten or disturb pigeons or squabs any more than is absolutely necessary. If the parent birds die the squabs may be removed to a nest where there is only one squab, or they may be fed artificially, although this process takes considerable time.

FEEDING.

Many varieties of grains are used in feeding pigeons. A good mixture of staple grains may be made of equal parts by weight of small whole corn, hard red wheat, Kafir corn, and Canada peas, with a small quantity (about 5 per cent each) of hemp and millet seeds added during the molting period. Other grains which may be substituted for or added to these are peanuts, dried garden peas, cowpeas, oats or hulled oats, buckwheat, Egyptian corn, and milo maize, while a small quantity of stale bread, rice, rape, millet, canary, vetch, or sunflower seed may be fed for variety. Canada peas are expensive, but seem to be essential to the best results, especially during the breeding season. They apparently take the place of green feed to some extent. Peanuts, cowpeas, and dried garden peas give quite good results and sometimes are used in place of Canada peas when the latter are high in price. Soy beans do not seem to be so well liked by pigeons. Tender green feed, such as freshly cut clover, alfalfa, and grass, lettuce, plantain leaves, and chickweed may be fed, but is not absolutely essential.

A variety of good, hard, thoroughly dried grains is essential to success. Grains which are in poor condition should not be fed. Old grains which are hard are much better than new soft grains, especially for pigeons with squabs. New soft grains, especially wheat and corn, should never be fed to pigeons, as they will cause bad results in the flock, particularly among the squabs. Feed whole corn and avoid cracked corn unless it is freshly cracked. Pigeon corn which is smaller and harder than common corn is used extensively for pigeons. Many pigeon breeders reduce the proportion of corn during the summer, feeding from one-half to three-fourths less of this grain than in the winter. Red wheat is considered better than white wheat by many pigeon breeders. Good wheat screenings are often fed with success, as they usually contain a variety of seeds. Various stimulating seeds, such as lentils and vetch, are sometimes fed as a tonic to breeding birds during the molting period.

The following table gives an analysis of the grains most commonly used in feeding pigeons. The protein content is very high in the three kinds of peas and in peanuts. One feed high in protein seems to be essential to get the best results. The ration of equal parts

by weight of whole corn, red wheat, Kafir corn, and Canada peas contains 14.2 per cent protein, 65.6 per cent nitrogen-free extract, 69.2 per cent carbohydrates (total of nitrogen-free extract plus the fiber), and 2.8 per cent fat.

Composition of pigeon feedstuffs.

Feedstuff.	Water.	Ash.	Protein.	Carbohydrates.		Fat.
				Fiber.	Nitrogen-free extract.	
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Corn.....	10.9	1.5	10.5	2.1	69.6	5.4
Wheat.....	10.5	1.8	11.9	1.8	71.9	2.1
Kafir corn.....	12.8	2.1	9.1	2.6	69.8	3.6
Oats.....	11.0	3.0	11.8	9.5	59.7	5.0
Canada peas.....	15.0	2.4	23.7	7.9	50.2	.8
Peas.....	13.4	2.4	22.4	6.4	52.6	3.0
Cowpeas.....	11.9	3.4	23.5	3.8	55.7	1.7
Peanuts.....	7.5	2.4	27.9	7.0	15.6	39.6
Buckwheat.....	12.6	2.0	10.0	8.7	64.5	2.2
Egyptian corn.....	12.6	1.9	9.9	1.9	69.7	3.9
Millet.....	12.1	2.8	10.9	8.1	62.6	3.5
Hempseed.....	8.0	2.0	10.0	14.0	45.0	21.0
Sunflower seed.....	8.6	2.6	15.3	29.9	21.4	21.2

The grain may be fed on the floor of the pen, in troughs, or kept before the birds in hoppers. (See fig. 10.) It is not generally considered advisable to feed the grain on the ground, especially on heavy soil where it may get wet and moldy. Unless the floor is kept clean it is better to feed the grain in troughs than on the floor. The troughs should be made so that the pigeons will not roost on them and soil the feed with their droppings. Hoppers in which considerable feed is kept are sometimes used with success but may attract rats in some pigeon houses. Troughs and open hoppers should be fitted with wires or slats about 2 inches apart so that the pigeons can not waste the feed by throwing it out on the floor. If the grain is not kept in hoppers the pigeons should be fed twice daily, in the morning and in the afternoon, at regular hours, giving about $1\frac{1}{2}$ to 2 quarts of grain at each meal to 20 pairs of pigeons and adding an extra pint if the pigeons have many squabs. The feeder must regulate the quantity of grain according to the appetite of the birds, giving them all they will eat and keeping a little grain in the feeder. The cost of feeding a pair of pigeons varies from \$2.25 to \$3.50 a year at the present price of grains (1920).

Clear drinking water, grit, sifted oyster shell, and charcoal should be kept before the pigeons at all times. Salt is fed to pigeons in various forms, and a supply is generally considered essential.

Pigeons not accustomed to eating fine salt may eat too much if given a large quantity at one time, although it is used with success by many careful feeders. Salt may be fed in lump form, such as rock salt or as fine salt moistened and baked into a hard lump, without danger of the pigeons' eating too much. Mixtures of commercial grits containing varying proportions of grit, charcoal, oyster shells, and salt are used by many pigeon raisers. A mixture of this kind may be made of 40 pounds of granite grit, 40 pounds of oyster shells, 10 pounds of charcoal, 5 pounds of salt, and 3 pounds of venetian red. Such mixtures are relished by the pigeons and seem to have some value in keeping them in good breeding and feeding condition.

Pans of water for bathing should be provided daily except during the winter and placed in the yards or flyways. These bath pans are

usually filled in the morning and emptied about noon. They should be used only about twice a week during the winter.



FIG. 11.—Squabs 3 weeks old.

MANURE.

Dry pigeon manure may be sold to tanneries and market gardeners in some sections at a good price, if it is kept free from any foreign matter, such as sand and nesting

material, but the demand is not large. As it is quite rich it has considerable value as a fertilizer and should be mixed with dry dirt or some filling material if used for this purpose.

MARKETING THE SQUABS.

Squabs are fed by the parent birds until they are marketed, which is usually at from $3\frac{1}{2}$ to $4\frac{1}{2}$ weeks of age. They must be sold about this age, as the period during which they are ready for market rarely exceeds one week. Squabs are in good market condition when fully feathered under the wings, which is usually about the time they begin to leave their nests, and if not marketed at that time they soon lose their baby fat and their flesh begins to get hard. (Fig. 11.) In the morning, before the breeders are fed, pick up the squabs to be marketed when their crops are empty. Leave them in a pen for 12 hours to allow all feed to pass out of their crops.

Squabs are usually killed in the same manner as poultry, by cutting the arteries in the back part of the roof of the mouth and piercing the brain, but if sent to market without plucking they are usually killed by pressing the thumb against the neck, where it joins the head, until it is dislocated. In sticking, the squabs are hung by their legs on nails or hooks, with their wings double-locked. After they are stuck, the feathers, with the exception of those on the head, are immediately plucked clean, using a dull knife for the pinfeathers, and the birds are cooled either by placing them in cold water or by hanging them in a cool place. If the crop contains any feed it should be cut open and thoroughly washed.

Squabs should be washed, cleaned, and graded according to size and quality, as dark-colored and small squabs tend to lower the price paid for an entire shipment of mixed squabs. They are usually packed breasts up for shipment, in a good supply of cracked ice, with paraffin paper between the layers of ice and squabs. The box or container should have holes in it for drainage.

The express charges on small shipments of squabs reduce the profit materially, making it difficult to sell the squabs from a small flock at a profit if they have to be shipped to commission men. As the period at which squabs are right for market does not exceed one week, it is necessary to have a good-sized flock to furnish more than a dozen birds for market at one time. A local market that will take any number of squabs is a great aid to the small producer. Parcel post is being used to some extent for local shipments of squabs where it is not necessary to pack them in ice. Local express shipments



FIG. 12.—Squab showing pinfeathers on underside of wing. Not quite old enough for market.

may sometimes be made without ice. If one has a small flock it usually pays best to build it up until it is large enough to make good-sized shipments. This, however, requires a constant expense without any return for some time.

The production of squabs from each pair of breeders varies from 1 or 2 to as high as 10 or 11 pairs a year, but an average of from 6 to 7 pairs is a fair estimate, although some squab breeders produce more. Squabs usually sell at the highest prices during cold weather, as pigeons do not breed so freely then as in spring.

The price paid for dressed squabs varies with their size, quality, and the season of the year. The quotations on the New York wholesale market in March, 1920, were as follows: Prime white, 10 pounds to the dozen, per dozen, \$12; 9 pounds to the dozen, \$11; 8 pounds to the dozen, \$10; 7 pounds to the dozen, \$8; 6 to 6½ pounds to the dozen, \$6; dark, per dozen, \$4; culls, \$2.50 to \$3. The price on dressed squabs weighing 9 pounds to the dozen, which is a fair average weight from good squab plants, was as follows, according to the wholesale quotations in New York: May, 1919, \$9; July, \$8; September, \$7.50; November, \$9.50; January, 1920, \$11.50, and March, \$11. The advantage, to the squab breeder, of size and quality is very apparent from these quotations.

DISEASES AND PARASITES.

The pens and yards where pigeons are confined must be kept clean. There is very little chance of making money from squabs unless the pigeons can be kept comparatively free from diseases and insect parasites. If healthy breeding stock is obtained, the houses and yards kept clean, and careful attention given to the birds, diseases and parasites should not be a material factor in squab raising.

The stock should be carefully watched and any sick birds removed from the breeding pens. The house should be kept dry, clean, well ventilated, and free from drafts. Have the floor covered with one inch of sand or gravel and rake off frequently the manure which collects on the top of the sand. The yards should be kept clean either by scraping the surface and adding fresh sand or gravel or by digging over the land and, if possible, planting it to grain.

The nests, nest boxes, and pens should be kept clean, but it is not advisable to disturb the nests which contain eggs or squabs any more than is necessary. The pens should be sprayed frequently with whitewash containing a little crude carbolic acid, or with a coal-tar disinfectant, and the nest boxes and perches should be examined for mites, especially in hot weather, and sprayed with kerosene oil or some commercial preparation which will kill them. If the breeders have many lice on their bodies and wings they should be treated

with sodium fluorid, either dusting by the pinch method or dipping in a solution.¹ The nests or nest pans should be cleaned out and the nesting material removed whenever dirty, but care should be taken not to disturb the squabs any more than is absolutely necessary.

CANKER.

Pigeons are subject to many of the diseases which affect poultry and may be treated in the same manner. Canker and the disease or condition called "going light" seem to be more prevalent in pigeons than in the domestic fowl. Canker appears as sores or cheesy patches in the mouth and throat, and can usually be prevented by providing good sanitary conditions and feeding only clean, sound grains and clean water. It may be treated by swabbing the mouth and throat with a solution of equal parts of hydrogen peroxid and water or by using dry sulphur. A sufficient quantity of potassium permanganate may be added to the drinking water to give it a wine color. Various remedies or preventives of disease are used in the drinking water by pigeon breeders whenever the stock appears to be in poor condition. Among these are carbolic acid, Epsom salt, copper sulphate, and venetian red. Ulcers sometimes appear on the head, around the bill, eyes, mouth, or in the throat, and pigeons thus affected should usually be killed.

"GOING LIGHT."

This disease or condition is more or less peculiar to pigeons and is difficult to cure. The symptoms of this condition are a gradual loss of flesh, frequently accompanied with diarrhea. It may be caused by feeding filthy or unsound grains, by insanitary conditions, and by any factor which tends to destroy the vitality of the pigeons. The practical method of treatment is to remove the cause. Pigeons in this or in any other diseased condition will often get well if allowed their freedom. Tonics are used by some pigeon breeders, especially during the molting season, but their constant use is not generally advised under normal conditions.

CAUSES OF DEAD SQUABS.

Dead squabs may be due to a variety of reasons which have been discussed somewhat throughout this article. The cause of the mortality must be found and removed if profitable results are to be expected. Some of the possible causes are extra males or unmated pigeons in the breeding pens, rats or mice in the house, and lack of vitality in the breeding stock, caused by the use of improper or insufficient feed, filthy conditions, or careless inbreeding. Good results can be obtained only when the loft contains strong, healthy, mated breeders.

¹ The treatment of lice and mites is discussed in Farmers' Bulletin 801, entitled "Mites and Lice on Poultry."

PRINCIPAL POINTS.

Begin with healthy, vigorous, properly mated breeders. Good-quality foundation stock is very essential to success.

Select and keep only prolific breeders which are also good feeders.

Feed a variety of good-quality hard grains, including peas or peanuts. Use small whole corn rather than cracked corn, unless the latter is freshly cracked.

Provide for the pigeons a pen which is dry, well ventilated, and can be kept free from rats and mice. Two nests should be allowed for each pair of breeders.

Keep clean, fresh, protected drinking water before the pigeons and provide a separate unprotected pan of water for bathing.

Market the squabs just as soon as they are feathered under the wings and about the time they are able to get out of their nests.

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